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Examining Dimensions of Electronic Service Quality for Internet Banking Services

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Abstract

Internet banking is one of the increasingly important businesses in electronic commerce worldwide. Delivering effective electronic service quality (e-SQ) is essential to becoming, and remaining, competitive in internet banking service. From the banks perspective, to remain competitive, banks should try to make customers satisfied with their services and offerings, and this can be achieved by measuring and improving dimensions of internet banking e-SQ. Use of e-SQ instruments, such as E-SERVQUAL, to determine dimensions of e-SQ for internet banking require researchers to review variables proposed in the instruments in term of their content and constructs validities in different context of services and countries. Thus, this study examined the use of E-SERVQUAL scale to determine dimensions of e-SQ for internet banking services in Malaysia. It reviewed main theories and instruments of e-SQ and findings of the previous studies on the e-SQ dimensions used to measure internet banking in USA, Hong Kong, Taiwan, Sweden, Iran and UK. Based on these reviews, a conceptual model of eight dimensions – efficiency, fulfilment, system availability, privacy, responsiveness, contact, assurance, and website aesthetic – was developed to measure e-SQ for internet banking. The first six dimensions were adapted from E-SERVQUAL scale and the other two was added to the model as a result of review of e-SQ dimensions used for internet banking and discussion with e-SQ experts. The primary data of e-SQ was gathered from 265 internet banking users of a commercial bank in Malaysia using convenience sampling procedure. The finding revealed that dimensions of e-SQ for internet banking are assurance-fulfillment, efficiency-system availability, privacy, contact-responsiveness, and website aesthetics and guide. The result calls for reinterpretation and reorganization of E-SERVQUAL dimensions and items when they are used in examining dimensions of e-SQ for internet banking. This paper extends the use of E-SERVQUAL and the understanding on construct of e-SQ to examine dimensions of Malaysia's internet banking e-SQ.

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1. Introduction

Electronic service quality (e-SQ) is becoming increasingly important in determining the success of electronic commerce application. In banking industry, delivering effective e-SQ is important for banks to provide customers efficient banking services, including internet banking, and to remain competitive in the market. Service quality measurement in internet banking services is an area of growing interest to researchers and managers [1]. However, there is still a lack of comprehensive e-SQ scales in the academia, and the majority of existing scales focuses on a limited set of variables [2]. Moreover, there is scarce literature that has investigated the service quality dimensions and attributes of internet banking services and the perceptions of internet banking users with regard to any particular bank [1]. Examining dimensions of internet banking e-SQ is one area of great interest to researchers and managers to ensure banks' competitiveness is sustained. Use of e-SQ instruments such as E-SERVQUAL [3], WebQual [4], SITEQUAL [5], and eTailQ [6] to determine dimensions of e-SQ for an electronic service, such as internet banking, require researchers to review dimensions and items proposed in the instruments in term of their content and construct validities in different context of services and countries. A review on dimensions that constitute internet banking e-SQ in Sweden, Taiwan, Hong Kong, UK, Iran and USA demonstrated that the above e-SQ instruments require some reinterpretation and reorganization to ensure their suitability and validity in internet banking setting. In view of these developments, this study attempts to: (i) determine dimensions of e-SQ for internet banking in the Malaysia context; and (ii) examine the underlying dimensions of internet banking e-SQ and to propose a multiple item scale for measuring e-SQ for internet banking. This study adapted E-SERVQUAL scale and dimensions of internet banking e-SQ that were identified in previous studies as a conceptual model to achieve these research objectives.

2. Literature Review

Electronic service can be defined as an interactive, content-centered, and internet-based customer service that is driven by customers and integrated with the support of technologies and systems offered by service providers, which aim at strengthening the customer-provider relationship [de Ruyter, 2001, in 1]. It is a web-based service or an interactive service that is delivered on the internet, such as internet banking. In internet banking, customers will interact with service providers (banks) through their websites. In this view, the quality of e-SQ is vital in determining the extent to which internet banking service offered meet users' requirements. E-SQ refers to the consumers overall evaluation and judgment of the excellent and quality of electronic service offering in the virtual marketplace [7]. It is the extent to which a web site facilitates efficient and effective shopping, purchasing, and delivery of products or services [8]. It can be described in terms of functionality and quality of service and the subjective of perceptions of the quality are resulting from actual usage of a website.

The scales that have been developed to measure the e-SQ in e-commerce environment such as E-SERVQUAL, WebQual, SITEQUAL, and eTailQ addressed the need to validate the instruments and to redefine or reorganize the variables and dimensions used, especially in different service context and countries. Crossing national boundaries exposes theories, concepts and instruments to a host of institutional and environmental differences that affect the ability to generalize theories developed in some countries, and challenge the relationships that are commonly accepted as "given" within a country [9]. Theories and instruments for measuring e-SQ, like E-SERVQUAL, must undergo further validation through research in different context of services and cultures before they are accepted as universal [10].

Previous researches findings on e-SQ dimensions in internet banking demonstrated the need to re-examine the suitability of using the identified dimensions in different countries. For examples, web-site setting, access, web site interface, trust, attention and credibility were dimensions of e-SQ in UK [11]; credibility, efficiency, problem handling, security in Hong Kong [12]; credibility, efficiency, fulfilment, security, site aesthetics, system availability in Sweden [13]; efficiency, fulfilment, system availability, privacy, contact, compensation, site aesthetics, customization in Taiwan [14], Efficiency,

Contact, and customization in USA [15] and reliable services, fulfilment, security/trust, site aesthetics, responsiveness/contact, and ease of use in Iran [16].

3. Methodology

The questionnaire for e-SQ dimensions of this study was based on the following steps;

- Step 1- it was adapted and modified based on E-SERVQUAL proposed by Parasuraman et al. [3] that can be classified into two scales; E-S-QUAL or core scale, and E-RecS-QUAL or recovery scale. The four dimensions of E-S-QUAL used were efficiency, fulfilment, system availability and privacy and security with 22 items. For RecS-QUAL, two dimensions used were responsiveness and contact with eight items. Measurement on the compensation dimension of RecS-QUAL requires the customers' experiences of problems with the given service and complaining about that. As it implies difficulty in evaluating this dimension because of the lack of enough people encountering problems, the compensation dimension of the E-S-QUAL scale has been dropped from this study.
- Step 2 - Based on the review on e-SQ dimensions for internet banking in UK [11], Hong Kong [12], Sweden [13], Taiwan [14], USA [15] and Iran [16, the authors added three new dimensions – assurance, site aesthetics and customization - to cover all potential demands of the Malaysia Internet banking customers.
- Step 3 - The researchers again reviewed all these dimensions of internet banking and used experts' opinion (four professors and five bankers) to filter the selected nine dimensions and defined all items for them to match existing services in Malaysia Internet banking. The outcome of this exercise was the final eight dimensions and 21 items to form the conceptual model for measuring e-SQ in internet banking. Dimension of customization was dropped because the site customization was not provided.

In multivariate research, the sample size required should be 5 to 10 times of variables for 5% to 10% margin of error [17]. Considering the total items of e-SQ is 21 in this research, it was predetermined to get at least 210 respondents to ensure 5% margin error. However, the researchers managed to collect randomly completed questionnaires from 256 internet banking users of a commercial bank in Malaysia.

4. Result and Analysis

To ensure validity of this research, Confirmatory Factor analysis (CFA) was conducted with principle component analysis as the extraction method and varimax as the rotation method. Kaiser normalization was used to analyse the collected data and confirm the usefulness of the research model in the context of internet banking. The KMO measurement of sampling adequacy value was 0.768, which was greater than 0.6, indicating that the proportion of variance in the variables was caused by the underlying factors, allowing the current data to proceed with factor analysis. In addition, the Bartlett's test of Sphericity value of 0.000 that was less than 0.05, proving that the analysis was significant. The constructs of e-SQ was extracted using loading factor of 0.5. Therefore, one item (e-SQ 7 - website accuracy of fulfilment) was neglected due to the factor loadings under this item were < 0.5. Based on the results of Total Variance Explained, five dimensions in the initial solution with eigenvalues greater than 1.0 has been extracted with the cumulative percentage of 79.009% for e-SQ. These five dimensions - Assurance-Fulfillment, Efficiency-System availability, Privacy, Contact-Responsiveness, and Website aesthetics and Guide, as indicated in Table 1, with 20 items accounted 79.009% of the variability in the original variables.

The reliability was evaluated by assessing the internal consistency of the items representing each construct of e-SQ using Cronbach's alpha. The reliability of each construct of e-SQ was more than 0.7 as follows: Assurance-Fulfilment = .912; Efficiency-System Availability = 0.852; Privacy = 0.783;

Contact-Rresponsiveness = .700; and Web Aesthetics and Guide = .781; overall e-SQ > .792. Thus, the e-SQ data in this research was reliable and valid for further analyses.

The results of the CFA, as presented in Table 1, indicated that there were five dimensions - Assurance-Fulfillment, Efficiency-System availability, Privacy, Contact-Responsiveness, and Website aesthetics and Guide - with 20 items constitute the e-SQ for Malaysia's internet banking services. Some dimensions and items were identical with what being addressed in the E-SERVQUAL instrument whilst some of them were renaming and refined and their implication was highlighted. In general, the four dimensions of E-S-QUAL – Efficiency, Fulfilment, System Availability and Privacy - and two dimensions of RecS-QUAL – Contact and Responsiveness – remained in the proposed conceptual model of e-SQ, but their positions and items were reloaded and reorganized, as depicted in Table 1.

Two additional dimensions – Assurance and Web Aesthetic – also remained in the model. Two items of Efficiency – website info and website map – were reloaded in to originally propose two items of Website Aesthetic to form a new dimension called Website Aesthetic and Guide. Two items of Assurance – confidence and good reputation - also remained but they were reloaded under Fulfilment dimension. Two of four items of Fulfilment – On time reaction and Bank's Accurate Response – were retained. Item website interactivity was reloaded in the Efficiency-System availability dimension and website accuracy was removed due to factor loading of CFA less than 0.5.

5. Discussions

This study attempted to determine dimensions of e-SQ for internet banking in Malaysia. Based on the CFA results of this research, the e-SQ dimensions for the internet banking are assurance-fulfillment, efficiency-system availability, privacy, contact-responsiveness, and website aesthetics and guide. The finding indicated that (i) Privacy is a e-SQ dimension for the Malaysia's internet banking and it was also found to be determinant of internet banking e-SQ in Hong Kong [12], Sweden [13], Taiwan [14] and Iran [16]; (ii) Fulfilment and assurance [1] were found as dimensions of the Malaysia's internet banking e-SQ, and these are identical with what being observed in Sweden [13], Taiwan [14] and Iran [16]; (iii) Site esthetics (website aesthetics and guide in this study) was also found to be a determinant of internet banking e-SQ in Sweden, Taiwan and Iran [13, 14 and 16]; (iv) Efficiency-system availability were also dimensions that constitute internet banking e-SQ in Hong Kong, Sweden, Taiwan and USA [12, 13, 14 and 15]; and (v) contact-responsiveness were dimensions of internet banking e-SQ in Malaysia, and they were identical with previous researches findings in Hong Kong, Taiwan, USA and Iran [12, 14, 15 and 16]. In general, it can be concluded that dimensions of internet banking e-SQ in Malaysia are identical with what being observed in Sweden, Taiwan, Iran, Hong Kong, UK and USA.

This study also assessed E-SERVQUAL scale to examine the underlying dimensions of internet banking e-SQ and to propose a multiple item scale for measuring e-SQ for internet banking in Malaysia.

Table 1: The refined dimensions and items of e-SQ internet banking

Items	Implication
Efficiency – System availability: The speed of accessing and using the site's internet banking and availability and functionality of the site that facilitate completion of all transactions in a convenience way	
e-SQ1: Browser Efficiency	Ability to get on the Internet banking site quickly
e-SQ3: Convenient Transaction	Ability to complete quickly a transaction through the bank's website
e-SQ4: User-friendly interface	Able to use the Internet banking utilities of website without a lot of effort
e-SQ8: Website Interactivity	The service delivered via all interfaces of the bank's website is efficient
e-SQ10: Web Site Availability	The Internet banking part of website is always available for business
e-SQ11: Website Proper Work	This bank site launches and runs right away
Assurance-Fulfilment: The confidence the customer feels in dealing with the site and the extent to which requirements of users are fulfilled in internet banking transactions	
e-SQ18: Confidence	Customers have confidence in the bank's service
e-SQ19: Good reputation	The bank internet banking is well known and has good reputation

e-SQ6: On Time Reaction	When the bank promises to do something by a certain time, it does so
e-SQ9: Bank's Accurate Response	The bank's site makes accurate promises about the services being delivered
Privacy: The internet banking transactions are saved and secured and customers information is protected	
e-SQ12: Customer authentication	No misuse of customers personal Information
e-SQ13: Safety and Security	Feel safe in internet banking transactions
Contact-Responsiveness: The availability and accessibility of banks' assistance through online representatives and effective and prompt handling of users' internet banking transaction problems and requests	
e-SQ16: Accessibility	The Bank's customer services are easily accessible
e-SQ17: Direct Link	The bank site has customer service representatives available online
e-SQ14: Direct and Fast Contact	Prompt response to customer request
e-SQ15: Quick Help	Quickly resolves online transaction problems
Website Aesthetic and Guide: The appearance and beauty of the site and the extent to which the information, structure and online content provide by the site helps customers to perform internet banking smoothly	
e-SQ20: Website Attractively	The website design is aesthetically attractive
e-SQ21: Website appearance	The website design is visually pleasing
e-SQ2: Website Info	Customers easily find what they need on the bank website
e-SQ5: Website map	The organization and structure of online content/graphic representation of bank site is easy to follow

As presented in Table 1, measuring internet banking e-SQ using E-SERVQUAL scale, and a multiple item scale for examining e-SQ in internet banking, should consider the following constructs:

a. **Efficiency, system availability, privacy, contact, and responsiveness**. These dimensions are proposed in the E-SERVQUAL scale. This suggests that these five dimensions of E-SERVQUAL can be used to measure e-SQ in internet banking, but reinterpretation and reorganization of the dimensions and items, as shown in Table 1, are required. Specifically, (i) efficiency-system availability should measure the speed of accessing and using the site's internet banking and availability and functionality of the site that facilitate completion of all transactions in a convenience way; and (ii) contact-responsiveness should examine the availability and accessibility of banks' assistance through online representatives and effective and prompt handling of users' internet banking transaction problems and requests. This also suggests that both E-S-QUAL and RecS-QUAL dimensions of e-SERVQUAL were essential to measure internet banking e-SQ

b. **Fulfilment** of E-SERVQUAL and **assurance**. The integration of these two dimensions highlighted that the use of E-SERVQUAL scale to measure internet banking e-SQ should consider dimensions of other scales, such as assurance of PeSQ [1]. The refined measurement of fulfilment and assurance should focus on the confidence the customer feels in dealing with the site and the extent to which requirements of users are fulfilled in internet banking transactions.

c. A new dimension that could be considered when measuring e-SQ for internet banking using E-SERVQUAL is **website aesthetics and guide**. This suggests that aesthetic values and visually appealing of banks' websites as well as information, instruction or guidance provide through the websites are vital to users.

6. Conclusions

This research extends the validity of using E-SERVQUAL scale to measure e-SQ for internet banking. Six out of seven E-SERVQUAL dimensions (fulfilment, efficiency, system availability, privacy, contact, and responsiveness) can be employed to determine the internet banking e-SQ. Modification to the dimensions and items of E-SERVQUAL is required when it is used to determine the e-SQ in internet banking perspective, as depicted in Table 1. Further, dimensions of other e-SQ scales (e.g. assurance) as well as a new dimension of website aesthetic and guide should be considered to ensure suitability of the E-SERVQUAL scale with the internet banking environment. For banks in Malaysia, in

order to improve and sustain quality of internet banking services delivered to users, they should focus on: (i) the technical quality of the banks' internet banking sites, i.e. system availability, efficiency, and fulfillment; (ii) the corporate image (assurance), for example by featuring rewards and recognition attained by banks in their promotion to increase usage of internet banking among current and new users; (iii) availability and readiness of staff to promptly respond to users' problems and requests (contact and responsiveness), for example through excellence customer service or efficient call center; and (ii) the aesthetic values of the banks' sites (website aesthetic and guide) via attractive graphic design of banks' sites, up-to-date information and proper guidance to use the internet banking service.

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